

Public Comment and Response Document, Bacteria TMDL for White Oak Swamp, Henrico County, Virginia, 2004, Public Comment Period January 29, 2004 to February 28, 2004.

Questions at Public Meeting, Fairfield Library, January 29, 2004:

1. **Is flow taken into account in the study?** Flow was taken into account for the study. Mean daily flows for Fourmile Creek from 1951 – 2003 were correlated from the gaging station Piscataway Creek near Tappahannock, VA (#01669000). Because the study dates were selected before any knowledge of rainfall during the period, the rainfall which occurred randomly influenced the study results.
2. **Was BST performed on E. coli or fecal coliform?** BST was performed on E. coli.
3. **How expensive is DNA analysis?** The cost of DNA analysis is approximately \$500 per sample.
4. **Does the reduction have to get to zero percent violations?** The USEPA requires that TMDL load allocations be determined for zero percent violations of the water quality standard. Please also see comment # 7 below.
5. **Does EPA require states to do TMDLs?** The Clean Water Act of 1972 requires states to develop TMDLs on impaired waters.
6. **Are we saying that wildlife does not matter?** Wildlife bacteria load is considered a natural effect from the presence of wildlife species in the watershed. Wildlife bacteria load is very important, but because wildlife is considered naturally present in the watershed, the TMDL does not seek reductions in wildlife bacterial load or populations. This includes Canada geese, even though a sub-species of non-migratory Canada geese inhabit Virginia along with the migratory population.
7. **Is the 10% violation rate an EPA requirement?** The 10% violation rate for which a waterbody is placed on the Impaired Waters list is an EPA required water quality assessment criteria in the biennial water quality assessment reports to EPA. The same 10% violation rate is used to determine that the waterbody meets the water quality standard as TMDL implementation improves water quality.
8. **How does the highest fecal value sway the study?** The highest E. coli value and load is used to determine the % reduction from the elevated bacterial load in the impaired stream down to the allowable TMDL bacterial load in the stream. This makes the % reduction conservative and part of the implicit margin of safety, because the reduction in the stream is always greater than or equal to the greatest difference between the TMDL and the most elevated E. coli load found in the samples.
9. **Is QAQC being done on the BST, E. coli, and fecal sampling and analysis?** Yes, sampling and analysis QAQC protocols for DEQ and the consultant performing the BST monitoring and analysis have been approved by the DEQ QAQC administrator.
10. **Would EPA know that swamps have low pH?** Yes, EPA is aware of this, but they may want states to more accurately classify streams as swampwaters. Assessing streams as impacted by low pH from swamp conditions requires states to create a swampwater class of waters with an appropriate low-end pH water quality standard.
11. **How likely is EPA to approve this TMDL?** The load duration TMDL method is new for 2004, and EPA has approved the method as designed. The chances are good that EPA will approve this TMDL.
12. **Have we considered the effects of new home development on TMDLs?** The TMDL process assesses current water quality problems evidenced by water quality sample data. However there is a margin of safety built into the TMDL load duration method (see question #8) which could be used to accommodate increased home production. In addition, one of the wasteload allocation scenarios used for impaired waters with a sewage treatment facility includes a five-fold increase in bacterial discharge due to treatment plant expansion for growth.

13. **Are there any TMDLs in the Implementation phase?** There are three TMDLs with EPA approved Implementation Plans: North River in Rockingham County, Middle Fork Holston River in Washington County, and Blackwater River in Franklin County. These may be viewed on the web at <http://www.deq.state.va.us/tmdl/tmdlrpts.html#implan> at the bottom of the webpage. Each of these has implementation activities ongoing.
14. **Are we considering decreasing wildlife populations over the years?** Virginia and EPA are not proposing the elimination of wildlife to allow for the attainment of water quality standards. The reduction of wildlife or changing a natural background condition is not the intended goal of a TMDL. Therefore DEQ is not taking into consideration expanded wildlife populations and possible increases in bacterial load in the future.

Comments written or emailed to DEQ during the public comment period, summarized below, with responses, and attached:

February 4, 2004:

Comment: DEQ Piedmont Regional Office permit writer staff confirmed that the Capital Region Airport Commission does not have a reissuance application for the RIC airport requesting to add chlorine surrogate limits as stated in the draft White Oak Swamp TMDL report. The permit is an individual stormwater permit and does not address fecal coliform bacteria or disinfection of the stormwater runoff.

Response: This has been corrected in the draft report.

February 26, 2004: From Richmond International Airport. Comments have been paraphrased to save time.

Comments:

1. The location of the Richmond International Airport was incorrect in Page 1, par. 3.

Response: This has been corrected.

2. A summary table is not provided for water quality data... In Page 1, par. 4, the numbers of violations and samples per assessment period do not add up to the total number of violations and samples from May 1996 to August 2003.

Response: We will add a data summary table in an appendix. The numbers of violations and samples in the 1998, 2000, and 2002 assessments do not add up to the total violations and samples for the period of record because each assessment is taken from a preceding 5 year assessment window. Thus three years of violations and samples are double-counted in each subsequent two year assessment. This is a standard EPA water quality assessment report requirement.

3. In Page 1, par. 7, A load-duration approach is used to develop the TMDL for this watershed. Why was a load-duration approach utilized and what could be the longterm impact to stakeholders by using this approach rather than a dynamic model as used in other bacteria TMDL studies conducted in Virginia?

Response: DEQ uses a combination of EPA-approved load-duration and contractor-modeled TMDL procedures to complete the large (and growing) number of bacterial caused TMDLs. Dynamic models performed by outside contractors are expensive. DEQ does not have staff resources to perform a large number of dynamic model bacterial TMDLs. DEQ cannot complete the number of bacterial TMDLs scheduled in the 1998 Consent decree with available funding unless a significant portion of

the bacterial TMDLs are done in-house by the EPA approved load-duration method. There is no long-term impact to stakeholders anticipated from use of the load-duration method.

4. Page 1, par. 9, ...Capital Regional Airport Commission is in the application phase requesting a chlorine surrogate limit. There are no plans for a chlorine or bacterial limit request, nor is the airport commission permit in the application phase.

Response: Please see February 4, 2004 comment above. This has been corrected in the report.

5. Page 2, par. 3, Please see February 4, 2004 comment above. This has been corrected in the report.
6. Section 2.1 is not listed in the Table of Contents. Section 2.1.1. has the same information as presented in Section 2.1.

Response: This has been corrected in the report.

7. Page 6, par. 1, White Oak Swamp is described as located in Hanover County, rather than Henrico County.

Response: This has been corrected in the report.

8. Page 6, par. 1, The proper name for the airport is Richmond International Airport.

Response: This has been corrected in the report.

9. See comment and response 2.

10. Page 12, Figure 6, The figure's legend is not completely displayed.

Response: This has been corrected in the report.

11. Please see February 4, 2004 comment above. This has been corrected in the report.
12. Page 17, par. 2 is very confusing and relies heavily on data from another TMDL, which is not included to assess the appropriateness of the land uses. A more detailed explanation should be included justifying use of the impervious land use areas assigned to the White Oak Swamp watershed.

Response: A more detailed explanation of the method and a percent impervious table adapted from the Lynnhaven TMDL have been added to this section.

13. Please see February 4, 2004 comment above. This has been corrected in the report.
14. Please see February 4, 2004 comment above. This has been corrected in the report.

15. Page 24, par. 3, Fourmile Creek is the adjacent watershed with a load-duration TMDL.

Response: This has been corrected in the report.

16. Page 26, par. 3, Was a statistical evaluation performed on the existing E. coli and fecal coliform data (sampled events listed in Table 6)...? Could the existing data be used for a set of regressions (translator equations) developed for wet and dry weather conditions? Because the major sources of fecal coliform bacteria in White Oak Swamp are NPS and storm-related, a wet weather regression could be used to translate fecal coliform observations to E. coli counts.

Response: Only ten data pairs were available in Table 6 for a specific White Oak Swamp translator regression. This was felt to be insufficient. The correlation of the 493 data pairs was judged the best estimator of E. coli concentration from fecal coliform. The major use for the translator regressions is

in translating all (both dry and wet weather) historical fecal coliform data into E. coli estimates for use in E. coli loadings in all DEQ load-duration studies state-wide. Individual station correlations of insufficient numbers of data pairs were deemed less accurate. Separate dry and wet weather translators used to translate all historical fecal data would require determining dry and wet weather sample dates for all historical fecal data in each impaired segment, which was deemed too time-consuming.

17. Page 26, par. 4, The sentence “For 2002 and 2003 where possible actual E. coli sample results were used to calculate observed E. coli loads.” is unclear. Please clarify.

Response: From 9/23/2002 to 8/5/2003 DEQ sampled E. coli concurrently with fecal coliforms. For this period DEQ used the actual E. coli results to derive the E. coli loads, rather than translated E. coli estimates from fecal coliforms. A statement to this effect has been added.

18. Page 28, figure 8, Is it appropriate to calculate the percent reductions based solely on one sample, which appears to be an outlier, rather than a method which considers all flow conditions?

Response: EPA requires that states determine the worst case exceedance of the E. coli standard and base the TMDL reduction on that. This provides part of the implicit margin of safety required for the TMDL by increasing the likelihood that the TMDL reduction will protect human health by lowering bacterial levels below the water quality standard under all flow conditions.

19. Page 30, par. 1, Please see February 4, 2004 comment above. This has been corrected in the report.

20. Page 31, par. 1, Please see February 4, 2004 comment above. This has been corrected in the report.

21. Page 31, par. 3, If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. Additional information on the load-duration approach for White Oak Swamp is needed. Is it appropriate to utilize the single-most extreme violation and apply it to all flow conditions?

Response: The load-duration method for White Oak Swamp, and for all watersheds where this method is used, provides several different types of implicit MOS. For instance, the TMDL is written for the new and more stringent E. coli water quality standard, rather than for the older less stringent fecal coliform water quality standard under which the original violations occurred. The load-duration method requires a wasteload allocation for MS4 permits, which double-counts the NPS bacterial loading from urban landuse runoff by attributing load to both point source stormwater outfalls and the NPS sheet flow entering the MS4 outfalls. The load-duration method requires a multiplier of 5 for point source wasteload allocations to account for future growth. This margin of safety factor for future development reduces the available load allocations for NPS runoff, reducing the allowable TMDL load. The TMDL reduction is calculated from the highest percent violation sample load above the allowable E. coli load to increase the likelihood that the TMDL reduction will protect human health by lowering bacterial levels below the water quality standard under all flow conditions. A statement describing these methods for an implicit margin of safety was added to the report.

22. Page 35, par. 3, According to information provided, there are 19 or 23 violations of water quality standards. Was a larger data set used to evaluate this analysis?

Response: There were 19 *fecal coliform* sample violations during the White Oak Swamp station period of record, as shown in Appendix F. The 35 *E. coli* water quality standard violations compared to rainfall and runoff data were *translated E. coli values* and *direct E. coli sample results* in late 2002 and 2003, as shown in Appendix E.

23. Page 35, par. 3, According to the information in Appendix E, nine occur in low flows.

Response: This has been corrected in the report.

24. Page 36, par. 1, Why will fecal coliform reductions be evaluated since this TMDL is being developed to meet water quality standards applicable to E. coli? Flow monitoring of White Oak Swamp should be implemented to further assess the flow duration curve developed for the watershed.

Response: The statement has been corrected to E. coli in the report. Flow monitoring at load-duration TMDL stations is too expensive to continue. Flow gage installation by the USGS costs \$12,000 to \$15,000 up-front, with annual monitoring costs of \$10,000 after installation. The large number of bacterial TMDL stations prohibits this expense.

25. Page 37, par. 8, ...Virginia's listing methodologies should require that designated uses and associated water quality criteria be re-evaluated before including water bodies on 303(d) lists. If uses are not properly set, then conclusions regarding impairment relative to water quality standards applicable to protecting those uses will be erroneous.

Response: EPA requires the methods and designated uses set forth in Virginia's 303(d) listing methodologies. These are specified in EPA guidance documents. EPA has just agreed to the new category "secondary contact recreational use" in the past year, which would allow substantially higher bacterial criteria. However EPA requires that secondary contact recreational use cannot be initiated unless TMDL implementation and post-monitoring data show that primary contact recreational use bacterial criteria cannot be met.



COMMONWEALTH OF VIRGINIA
COUNTY OF HENRICO

ROBERT C. THOMPSON, P.E.
DIRECTOR OF PUBLIC WORKS
COUNTY ENGINEER
(804) 501-4393

February 16, 2004

RECEIVED
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PRO

Mark Alling
Department of Environmental Quality
4949 A Cox Road
Glen Allen, VA 23060

Dear Mr. Alling,

Recently, the Department of Environmental Quality (DEQ) hosted several meetings regarding draft Total Maximum Daily Load (TMDL) requirements for certain stream reaches in Henrico County. Henrico County staff attended these meetings and expressed concerns about ways to address some of the sources of the identified pollutants, specifically fecal loads. As you recall, we raised the issue of unregulated point sources as potentially contributing significant pollutant loads to our streams. Although identification of these point sources is often a difficult task, Henrico County has identified approximately 200 such locations as a result of a County-wide stream assessment and stream corridor inventory conducted in the fall of 2000.

During the development of the County's Stream Assessment / Watershed Management Program, the County conducted habitat assessments and stream corridor inventories of approximately 440 miles of stream through out the County. Generally, all streams with 100 acres or more drainage area were walked by field teams. Among the many items (utility structures, stream crossings, dumpsites, areas of erosion, etc.) we identified within the stream corridor was the location of pipes discharging to the stream. We also made note of the size and type of the pipe and the nature of the discharge, if any. In fact, on the first day of the assessments, two pipes were found that were the direct sewage outfalls from two residences. These straight pipes were immediately turned over to the local Health Department and Department of Public Utilities and corrected.

Although many of the pipes identified are County approved storm sewer outfalls, there are approximately 200 that are smaller than the minimum allowable diameter for storm sewer (15 inches) and their source is unknown. We have previously met with DEQ representatives to determine options for testing these pipes. As I am sure you are aware most streams are located on private property (homeowners own to center line of stream). Therefore, the ability of the County to legally test and enforce pipe disconnections came into question. It was our understanding that our staff could act as an agent of the State Water Control Board and perform inspections for these outfall pipes (see attached correspondence). Unfortunately a decision was made at DEQ not to allow this. We then offered to turn the location of these pipes over to DEQ for further

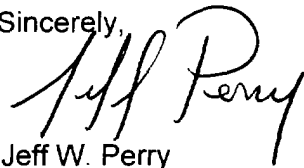
investigation, however we have received no request to date. Hence, for more than a year, we have had known outfall pipes discharging to State waters that have not been inspected. A copy of our previous correspondence is included for your reference.

Since developing an implementation plan to eliminate sources of pollutants will be required as a component of the TMDL, we feel that one of the first steps for any implementation plan is the identification and elimination of potential sources. We are forwarding you a map of outfall pipe locations in the watersheds of the impaired stream segments. We are also providing an Arc View shape file showing the location of all the questionable pipes in the County. Obviously, we are frustrated as we have already identified outfall pipes (potential sources) and feel the investigation of these pipes should have occurred some time ago. If these pipes had been investigated and all identified violations corrected, additional controls in the form of a TMDL may not have been needed.

It is our understanding that DCR will be responsible for preparing TMDL implementation plans for impaired watersheds. We are hereby requesting that investigation of these pipes by DEQ be included in the TMDL implementation plans. Prior to spending valuable local resources to identify additional possible pollutant sources in a watershed, DEQ should investigate those that have already been identified. We have always felt that not only would this information be valuable for our goal of improving water quality, but would be useful information for other localities who are contemplating similar stream inventories and/or have impaired waters.

We look forward to your response and if you have any further questions regarding this matter, you can reach me at 501-4539.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeff Perry". The signature is fluid and cursive, with the first name "Jeff" and last name "Perry" clearly distinguishable.

Jeff W. Perry
Environmental Manager

Attachments

pc: Joseph Maroon, Director, Virginia Department of Conservation and Recreation

September 16, 2002

Mr. Robert G. Burnley
Director, Virginia Department of Environmental Quality
629 East Main Street
P.O. Box 10009
Richmond, Virginia 23240-0009

RE: Authority for Private Pipe Investigation in
Henrico County

Dear Mr. Burnley:

In August 2001, Henrico County adopted an innovative program to address stormwater quality requirements mandated by Section 402(p) of the Clean Water Act (the National Pollutant Discharge Elimination System) and the Chesapeake Bay Preservation Area (CBPA) Designation and Management Regulations. Development of the Stream Assessment / Watershed Management Program (Program) took over four years during which the Department of Environmental Quality, the Department of Conservation and Recreation, and the Chesapeake Bay Local Assistance Department were routinely consulted. Since its adoption, the Program has been found consistent with both the CBPA Regulations and the Virginia Stormwater Management Regulations. The Program is also a component of the County's Virginia Pollutant Discharge Elimination System (VPDES) permit.

In developing the Program, an extensive assessment and inventory of the streams throughout the County was conducted. All streams with 100 acres or more of drainage area (approximately 440 miles) were walked and evaluated. In addition to conducting habitat assessments of the stream reaches, we identified and inventoried items and conditions such as eroded streambanks, road crossings, stream obstructions and pipes within the stream corridor.

The inventoried pipes should be of particular interest to DEQ since they discharge directly to state waters. During the stream evaluations, we did identify illicit discharges from several of these pipes and addressed them immediately. However, no discharge was evident from the majority of the pipes and therefore we were unable to determine whether or not the pipes constitute an illicit discharge to state waters. Although some of the pipes are clearly outfalls of the public storm sewer system, approximately 200 of the inventoried pipes are smaller than the minimum allowable size for storm sewer (15 inches in diameter). Many of these could be roof or foundation drains. However, they could also be gray water discharges (from washing machines) or sewage outfalls from

Mr. Robert G. Burnley
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individual residences (two pipes found on the first day of the stream assessments were the main sewage outfalls for dwellings.)

In order to determine the source of these pipes, additional investigation and monitoring is needed and the County is ready to investigate the pipes. However, we feel we lack the authority to conduct monitoring of private pipes that discharge to state waters. As you are aware, the County's jurisdiction established by the VPDES permit is limited to the municipal storm sewer system. We are unaware that the current or proposed language of our VPDES permit authorizes County staff to conduct such investigations. In fact, Mr. Jeff Perry contacted Mr. Mark Alling of your staff in September 2001 concerning this issue and Mr. Alling responded with the following quote from the state water control law:

Section 62.1 - 44.20: "Right to entry to obtain information, etc... - Any duly authorized agent of the Board may, at reasonable times and under reasonable circumstances, enter any establishment or upon any property, public or private, for the purposes of obtaining information or conducting surveys or investigations necessary in the enforcement of the provisions of this chapter." - page 423, Code of Virginia 1950, Volume 9, 1998 Replacement Volume.

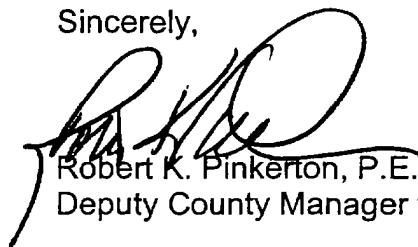
We consulted the County Attorney's office and it is their opinion that we would need to be "duly authorized" by the State Water Control Board in order to conduct the pipe investigations. Based on this response, we contacted Mr. Martin Ferguson and requested a meeting to discuss becoming an authorized agent of the Board. The meeting was held on November 15, 2001 and Mr. Ferguson, Mr. James Golding, and Mr. Burt Tuxford from DEQ were present and Mr. Jeff Perry and Mr. Keith White attended from Henrico County. After discussing the issue, it was our understanding that instead of pursuing authority through the Board, appropriate language would be added to our VPDES permit authorizing County staff to conduct the necessary investigations and monitoring.

Recently, we were contacted by Ms. Oula Shehab of your Department to discuss draft language for the reissuance of our VPDES permit. When we asked about the authority language she indicated that she was unaware of the issue. Ms. Shehab later informed us that according to Mr. Ferguson, the County has the authority to investigate and monitor the pipes. However, there was no indication where the authority was provided.

Mr. Robert G. Burnley
September 16, 2002
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As I mentioned earlier, the County is in a position to proceed with investigating the pipes as long as we have clear authority to do so. If DEQ or the State Water Control Board does not provide the County with authority, we will turn the inventory information over to DEQ for your information and request that you notify us of the results of your investigations. If you have any questions, please contact Mr. Jeff Perry at 501-4539.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. K. Pinkerton', is written over the printed name.

Robert K. Pinkerton, P.E.
Deputy County Manager for Community Operations

C: Mr. Jeff Perry, Environmental Management Engineer
Mr. Keith White, Environmental Engineer

RKP/KOW/lhc



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

W. Tayloe Murphy, Jr.
Secretary of Natural Resources

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Robert G. Burnley
Director
(804) 698-4000
1-800-592-5482

October 3, 2002

Mr. Robert K. Pinkerton, P.E.
Deputy County Manager for
Community Operations
County of Henrico
P.O. Box 27032
Richmond, Virginia 23273-7032

Dear Mr. Pinkerton:

In response to your letter of September 16 to Robert Burnley, the 1990 EPA Phase 1 Storm Water Regulations required Henrico County, as a designated medium municipal separate storm sewer system (MS4), to develop a storm water management program (SWMP) to reduce the impacts of the County's MS4 storm water discharges to the maximum extent practicable. In the permit application, which was submitted to DEQ in May 1993, the County was required to demonstrate that they had adequate legal authority to control industrial discharges to the MS4, prohibit illicit discharges to the MS4, control spills and dumping or disposal of materials to the MS4, require compliance with conditions in ordinances, permits, contracts or orders, and carry out all inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions including the prohibition on illicit discharges to the MS4.

In the permit that was issued by DEQ to Henrico County on July 23, 1997, Special Condition #3 required the County to operate pursuant to the established legal authority to carry out all parts of the SWMP. If the existing legal authority was not sufficient to carry out all parts of the SWMP, the permit required the County to seek additional authority as necessary and appropriate, and to supply a schedule and description of the proposed additional authority in the first Annual Report that was submitted to DEQ.


In response to a Notice of Violation that the County received for failing to perform any of the permit required storm water discharge monitoring, the County proposed to modify their permit and the SWMP to substitute the Stream Assessment Program for the storm water discharge monitoring requirement. DEQ agreed to this and has drafted a permit for reissuance with the new Stream Assessment Program as a requirement. If the County does not have the legal authority to carry out the program as described, then they must seek the additional authority through ordinance, order or similar means, and supply a schedule and description of the proposed additional authority in the next Annual Report that is submitted to DEQ. The Stream Assessment Program is a County program, not a DEQ program, and as

Mr. Robert K. Pinkerton, P.E.
October 3, 2002
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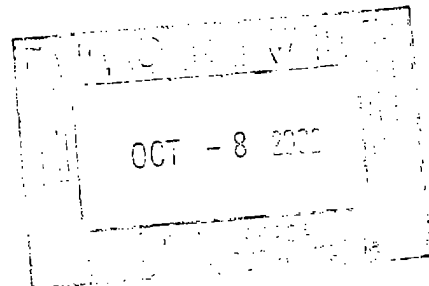
such, it is not appropriate for the State Water Control Board to "duly authorize" the County as its agent to carry out these investigations.

If you have any questions regarding this matter or your draft permit, please contact Ms. Oula Shehab of the Piedmont Regional Office.

Sincerely,


Richard F. Weeks, Jr.
Deputy Director for Operations

cc: Martin Ferguson, DEQ
Gerry Seeley, DEQ





COMMONWEALTH OF VIRGINIA
COUNTY OF HENRICO

ROBERT C. THOMPSON, P.E.
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October 18, 2002

Mr. Richard F. Weeks, Jr.
Deputy Director for Operations
629 East Main Street
P.O. Box 10009
Richmond, Virginia 23240-0009

RE: Authority for Private Pipe Investigation in Henrico County

Dear Mr. Weeks:

We have received your letter dated October 3, 2002 related to our questions concerning local authority for investigation of private pipes. Based on your letter, we feel there is a misunderstanding with regards to these pipes and the County's Stream Assessment / Watershed Management Program (Program). I would like to offer the following discussion in hopes that it may clarify the County's position.

In response to a Notice of Violation issued by DEQ, the County proposed a modification to its municipal storm sewer system (MS4) consisting of a program of stream assessments in lieu of stormwater discharge monitoring. The assessments included habitat assessments of all stream segments with 100 acres or more of drainage area and bioassessments to be conducted on a regular basis at various locations throughout the County. This alternative approach was accepted by DEQ and the assessments were completed in the Fall of 2000. The information gathered during the assessments was used to develop the Program. The Program was subsequently determined to be consistent with the Virginia Stormwater Management Regulations in January 2002.

During development of the Program, the County did in fact pursue and obtain a state code revision to authorize the County to collect funds as a means of complying with the stormwater management requirements. This revision became effective on July 1, 2001. **To clarify one point of confusion, the County currently has the authority to implement all required components of the Program.**

While we were conducting the stream assessments, we felt much could be gained by identifying other influences that could be impacting the stream health within the County. Items such as dumpsites, stream obstructions and erosion areas were identified and many have been addressed. We also identified numerous pipes that discharge directly to the stream system. Although many of these pipes are part of the County's MS4, approximately 200 are not. Some of

Mr. Richard F. Weeks, Jr.
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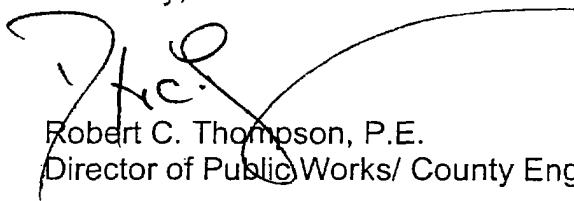
these were easily identified illicit discharges and were immediately addressed. The origins of others are unknown. There are three important points to mention concerning the pipes of unknown origin:

- 1) **The pipes discharge into state waters, and are therefore outside the locally regulated MS4,**
- 2) **Additional investigation is required to identify the origins of the pipes, and**
- 3) **The pipes are on private land.**

In discussing the negative impacts these pipes could have on stream health and our desire to address them, we were advised that we lacked the authority to pursue them. Subsequently, we began discussions with DEQ to obtain this authority.

Instead of a continued letter campaign, we would like to meet with you and other appropriate DEQ staff to resolve this issue. I'm sure we can come to an agreement regarding these pipes, especially since we share a common goal – to improve the quality of our stream systems. If you have any questions, please contact Jeff Perry at 501-4539.

Sincerely,



Robert C. Thompson, P.E.
Director of Public Works/ County Engineer

C: David Paylor, Deputy Secretary of Natural Resources
Robert G. Burnley, Director, DEQ
Oula Shəhab, Environmental Specialist, DEQ
Robert K. Pinkerton
Jeff Perry



COMMONWEALTH OF VIRGINIA
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DIRECTOR OF PUBLIC WORKS
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(804) 501-4393

October 18, 2002

Ms. Oula K. Shehab, Ph. D.
Environmental Specialist
Department of Environmental Quality
4949-A Cox Road
Glen Allen, Virginia 23060

RE: VPDES Permit VA0088617 Henrico County MS4
Draft Permit Language

Dear Ms. Shahab:

We have received your letter dated October 11, 2002 discussing the Department of Environmental Quality's responses to our comments concerning the draft language for the County's VPDES permit. According to your letter, DEQ staff does not concur with two of the County's recommended revisions.

One of the outstanding issues concerns the County's authority to conduct further investigations of pipes identified during the stream assessments. **These pipes outfall directly into State waters, not the County's MS4 system.** We did receive a letter from Mr. Richard Weeks, Deputy Director for Operations discussing this issue. However, there appears to be a misunderstanding with regards to these pipes and the County's Stream Assessment / Watershed Management Program. Therefore, we are requesting a meeting with Mr. Weeks and other appropriate DEQ staff to resolve this issue. A copy of this request is attached. We further request that the draft permit language not be finalized until that meeting is held.

The other outstanding issue concerns the VPDES General Permit for Discharges from Construction sites. In your letter, you state that "The draft permit is requiring the submittal of a list of all land disturbance projects and their acreage that the county has granted to developers."

Please note that this is not what the draft language requires. The draft permit language reads

Oula K. Shehab, Ph.D.
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Page 2

Within 30 days of approval of a site plan, the permittee shall notify the Department of Environmental Quality, Piedmont Regional Office of the owner and site location of all land disturbing activities of greater than 5 acres. Upon final DEQ promulgation of regulations which incorporate the federal regulations (40 CFR 122.26 Phase II Storm Water), the permittee shall notify the Department of Environmental Quality, Piedmont Regional Office of the owner and site location of all land disturbing activities greater than one acre...

This language does not require a year-end listing of approved projects but a project-by-project reporting that will result in significant paperwork for County staff. In addition, the proposed language also requires owner information and specific location of the projects. In the County's opinion, this regular reporting of potential violators does constitute *administration* of DEQ's General Permit for Construction Activities, albeit on the enforcement side of the permit requirements.

Although we continue to request the language be removed from the draft permit, we will agree to provide, as part of our annual report, a listing of projects authorized for construction along with the resulting disturbed acreage and the hydrologic unit in which the project is located. This is very similar to a report to we currently provide to the Department of Conservation and Recreation on an annual basis.

Once these remaining issues are resolved, we will sign and forward the Public Notice Authorization to you.

If you have any questions, please contact Keith White at 501-7475.

Sincerely,



Robert C. Thompson, P.E.
Director of Public Works/County Engineer

C: David Paylor, Deputy Secretary of Natural Resources
Robert G. Burnley, Director, DEQ
Richard F. Weeks, Jr., Deputy Director for Operations, DEQ
Robert K. Pinkerton
Jeff Perry

ID	TYPE	PIPEDIAM	DSCHRGTP	DISCHARGE FROM ADJACENT PONDS	DSCHRGQUAL
ZTI05.P02	Pipe	12.000000	None		Clear
ZTI16.P01	Pipe	4.000000	None		
ZTI16.P02	Pipe	4.000000	None		
ZTI16.P03	Pipe	4.000000	None		
GCR16.P02	Pipe	3.000000	UNKNOWN		Clear
GCR04.P02	Pipe	12.000000	ORANGE MUD		IRON FLOCCULENT,A ND MUD
GCR06.P01	Pipe	12.000000	SPRING?		Clear
GCR14.P03	Pipe	12.000000	None		
GCR13.P06	Pipe	2.000000	UNKNOWN		Clear
GCR13.P05	Pipe	4.000000	Industrial		
GCR13.P04	Pipe	2.000000	Stormwater		
GCR13.P03	Pipe	12.000000	None		
GCR13.P01	Pipe	12.000000	None		
GCR16.P01	Pipe	1.000000	Stormwater		Clear
GCR12.P01	Pipe	4.000000	UNKNOWN		UNKNOWN
GCR26.P01	Pipe	12.000000	None		
GCR26.P02	Pipe	1.000000	None		
GCR26.P03	Pipe	2.000000	Industrial		Iron Flocculent
GCR26.P04	Pipe	2.000000	Industrial		UNKNOWN
GCR21.P01	Pipe	12.000000	Stormwater		
GCR21.P02	Pipe	12.000000	Stormwater		
GCR34.P01	Pipe	4.000000	None		
BBR10.P02	Pipe	2.000000	NONE, STORMWATER		
BBR10.P01	Pipe	2.000000	NONE,STORMWATER		
BBR11.P01	Pipe	2.000000	SPRING		Clear
BSC25.P01	Pipe	1.000000	Stormwater		
BSC32.P01	Pipe	2.000000	None		
SPD10.P01	Pipe	6.000000	STORMWATER OR POND OUTLET		Iron Flocculent
YSC02.P01	Pipe	2.000000	None		
UFC03.P01	Pipe	12.000000	Stormwater		
UFC01.P02	Pipe	4.000000	Stormwater		
UFC01.P01	Pipe	6.000000	Roof Drain (dry)		
MBR08.P03	Pipe	12.000000	None		
MBR08.P02	Pipe	12.000000	None		
MBR08.P01	Pipe	8.000000	None		Clear
MBR07.P03	Pipe	12.000000	None		

MBR10.P01	Pipe	4.000000	UNKNOWN	N/A
ALC02.P01	Pipe	8.000000	None	TOILET PAPER
ALC05.P02	Pipe	4.000000	Sewage	NONE
ALC18.P02	Pipe	8.000000	Stormwater	Clear
ALC07.P01	Pipe	3.000000	UNKNOWN	UNKNOWN
ALC08.P01	Pipe	4.000000	None	N/A
ALC09.P03	Pipe	4.000000	None	OIL SHEEN AND IRON FLOCCULENT
AMC01.P03	Pipe	8.000000	UNKNOWN	UNKNOWN
ALC05.P08	Pipe	3.000000	None	Clear
ALC12.P02	Pipe	2.000000	Stormwater	Clear
ALC10.P11	Pipe	12.000000	Stormwater	UNKNOWN
ALC10.P10	Pipe	4.000000	UNKNOWN	UNKNOWN
ALC10.P09	Pipe	4.000000	UNKNOWN	UNKNOWN
ALC10.P08	Pipe	3.000000	UNKNOWN	UNKNOWN
ALC10.P07	Pipe	3.000000	UNKNOWN	UNKNOWN
ALC10.P06	Pipe	4.000000	Sewage	NONE
ALC10.P05	Pipe	3.000000	Sewage	Clear
ALC10.P04	Pipe	4.000000	Sewage	Clear
RAC22.P01	Pipe	12.000000	Stormwater	Clear
RAC11.P03	Pipe	6.000000	Industrial	NO FLOW
RAC11.P02	Pipe	4.000000	Industrial	NO FLOW
WOC47.P01	Pipe	6.000000	Industrial	Clear
YSR03.P12	Pipe	1.500000	None	
YSR03.P11	Pipe	1.500000	None	
YSR03.P09	Pipe	8.000000	None	
YSR03.P08	Pipe	3.000000	Stormwater	Clear
YSR03.P07	Pipe	3.000000	None	
YSR09.P01	Pipe	4.000000	None	
YSR09.P02	Pipe	4.000000	None	
YSR09.P03	Pipe	12.000000	None	
YSR03.P01	Pipe	3.000000	None	
YSR03.P02	Pipe	3.000000	None	
YSR03.P03	Pipe	3.000000	None	
YSR03.P04	Pipe	5.000000	Stormwater	Clear
YSR03.P05	Pipe	5.000000	None	
YSR03.P06	Pipe	3.000000	None	
YSR12.P01	Pipe	4.000000	None	

YSR02.P02	Pipe	6.000000	None	Iron Flocculent
YSR02.P04	Pipe	5.000000	None	Iron Flocculent
YSR02.P06	Pipe	12.000000	None	Clear
YSR02.P07	Pipe	12.000000	None	Clear
YSR01.P03	Pipe	4.000000	Stormwater	
YSR01.P02	Pipe	12.000000	Stormwater	
YSR01.P04	Pipe	4.000000	Stormwater	
YSR01.P01	Pipe	5.000000	None	
XGW10.P01	Pipe	12.000000	None	
XGW07.P02	Pipe	8.000000	None	
WOC63.P04	Pipe	10.000000	None	N/A
WOC63.P02	Pipe	10.000000	None	N/A
WOC63.P05	Pipe	10.000000	None	N/A
NTB02.P06	Pipe	12.000000	None	NONE
NTB02.P01	Pipe	3.000000	None	NONE
NTB01.P04	Pipe	4.000000	None	NONE
NRB01.P03	Pipe	12.000000	None	NONE
NRB04.P04	Pipe	12.000000	Stormwater	Clear
NRB04.P03	Pipe	12.000000	None	NONE
NRB02.P02	Pipe	12.000000	None	NONE
NRB07.P01	Pipe	4.000000	Roof Drain (dry)	NONE
NRB09.P01	Pipe	6.000000	None	NONE
NRB09.P03	Pipe	4.000000	Roof Drain (dry)	NONE
NRB09.P05	Pipe	4.000000	Roof Drain (dry)	NONE
NRB09.P07	Pipe	3.000000	Roof Drain (dry)	NONE
UJB02.P11	Pipe	6.000000	None	NONE
UJB03.P01	Pipe	12.000000	None	
UJB03.P04	Pipe	12.000000	None	
UJB03.P07	Pipe	12.000000	None	
UJB03.P08	Pipe	12.000000	POSSIBLE ILLICIT	
DSR01.P10	Pipe	12.000000	UNKNOWN	Clear
VTR12.P02	Pipe	4.000000	None	NONE
VTR12.P07	Pipe	4.000000	None	
VTR14.P01	Pipe	3.000000	None	
VTR13.P01	Pipe	12.000000	None	
VTR13.P02	Pipe	12.000000	None	
VTR10.P01	Pipe	6.000000	None	

VTR10.P02	Pipe	6.000000 None	Clear	
VTR10.P03	Pipe	6.000000 None	Clear	
VTR10.P04	Pipe	6.000000 None		
VTR10.P05	Pipe	6.000000 None		
VTR10.P06	Pipe	6.000000 None		
QRB07.P03	Pipe	12.000000 Stormwater		
QRB07.P02	Pipe	12.000000 Stormwater		
QRB02.P02	Pipe	12.000000 Stormwater		
QRB06.P02	Pipe	12.000000 Stormwater		
QRB06.P01	Pipe	6.000000 Stormwater		
LTW05.P03	Pipe	12.000000 None		
LTW05.P01	Pipe	4.000000 Roof Drain (dry)		
LTW04.P07	Pipe	12.000000 Industrial		
LTW07.P01	Pipe	4.000000 Roof Drain (dry)		
LTW01.P02	Pipe	4.000000 Roof Drain (dry)		
LTW06.P05	Pipe	3.000000 Roof Drain (dry)		
LTW06.P04	Pipe	3.000000 Roof Drain (dry)		
LTW06.P03	Pipe	3.000000 Roof Drain (dry)		
HLS07.P01	Pipe	12.000000 None		
HLS02.P03	Pipe	12.000000 UNKNOWN		IRON TINTED
HLS02.P02	Pipe	6.000000 UNKNOWN		IRON TINTED
HLS02.P01	Pipe	5.000000 UNKNOWN	Clear	
HLS21.P01	Pipe	2.000000 UNKNOWN	Clear	
HLS14.P01	Pipe	3.000000 UNKNOWN		
DRN51.P08	Pipe	12.000000 None		NONE
DRN51.P14	Pipe	4.000000 Roof Drain (dry)		NONE
KUC08.P03	Pipe	3.000000 Stormwater	Clear	
KUC07.P02	Pipe	3.000000 Stormwater		
UPB25.P02	Pipe	12.000000 Stormwater		
UPB21.P03	Pipe	4.000000 Stormwater		
UPB21.P02	Pipe	10.000000 Stormwater		
UTB02.P04	Pipe	3.000000 Roof Drain (dry)		
UTB02.P01	Pipe	10.000000 Stormwater		
UTB01.P01	Pipe	4.000000 Stormwater		
UPB14.P02	Pipe	10.000000 Stormwater		
UPB14.P01	Pipe	3.000000 Stormwater		
UPB13.P02	Pipe	4.000000 WATER INTAKE		

UFC04.P03	Pipe	6.000000 Stormwater	Clear
UFC04.P04	Pipe	6.000000 Stormwater	
UFC04.P05	Pipe	6.000000 Stormwater	
UPB11.P10	Pipe	6.000000 Stormwater	Clear
UPB11.P09	Pipe	6.000000 Stormwater	Clear
UPB11.P08	Pipe	6.000000 Stormwater	Clear
UPB11.P07	Pipe	6.000000 Stormwater	Clear
UPB11.P06	Pipe	6.000000 Stormwater	Clear
UPB11.P05	Pipe	6.000000 Stormwater	Clear
UPB11.P04	Pipe	6.000000 Stormwater	Clear
UPB11.P03	Pipe	6.000000 Stormwater	
UPB11.P02	Pipe	6.000000 Stormwater	
UPB11.P01	Pipe	6.000000 Stormwater	
UPB10.P02	Pipe	4.000000 Roof Drain (dry)	
UPB08.P02	Pipe	4.000000 Stormwater	
CRC41.P01	Pipe	2.000000 PUMPING FROM CREEK	
CRC48.P01	Pipe	12.000000 None	
CRC50.P01	Pipe	2.000000 UNKNOWN	
CRC33.P02	Pipe	12.000000 None	
CRC32.P02	Pipe	12.000000 None	
CRC35.P01	Pipe	6.000000 None	
CRC25.P01	Pipe	12.000000 None	
RAC34.P01	Pipe	6.000000 UNKNOWN	NONE
RAC40.P01	Pipe	6.000000 Sewage	NONE
THB02.P05	Pipe	4.000000 Roof Drain (dry)	
THB02.P07	Pipe	12.000000 None	
THB02.P09	Pipe	4.000000 Roof Drain (dry)	
THB02.P11	Pipe	12.000000 None	
UHB03.P11	Pipe	3.000000 Roof Drain (dry)	
UHB03.P10	Pipe	3.000000 Roof Drain (dry)	
UHB03.P09	Pipe	3.000000 Roof Drain (dry)	
UHB03.P08	Pipe	3.000000 Roof Drain (dry)	
UHB03.P07	Pipe	3.000000 None	
UHB03.P02	Pipe	3.000000 Roof Drain (dry)	
UHB03.P01	Pipe	3.000000 NON-STORMWATER/POSSIBLE ILLICIT	
UHB04.P02	Pipe	10.000000 Stormwater	Clear
UHB04.P03	Pipe	10.000000 None	

UHB02.P02	Pipe	4.000000 None	Clear
UHB01.P06	Pipe	12.000000 None	Clear
UHB01.P05	Pipe	4.000000 Roof Drain (dry)	Clear
HLS02.P04	Pipe	12.000000 Stormwater	NO FLOW
TCC01.P02	Pipe	12.000000 Stormwater	
TCC02.P01	Pipe	12.000000 Stormwater	
PHS08.P03	Pipe	12.000000 None	
FMC30.P01	Pipe	12.000000 Stormwater	Clear
FMC27.P02	Pipe	1.500000 Stormwater	Clear
FMC27.P01	Pipe	1.500000 Stormwater	Clear
FMC72.P01	Pipe	4.000000 None	
FDB07.P01	Pipe	4.000000 Industrial	Clear
FBC11.P01	Pipe	3.000000 Industrial	NONE
NOR10.P11	Pipe	8.000000 POOL	Clear
NOR07.P01	Pipe	12.000000 Stormwater	
NHC02.P01	Pipe	8.000000 None	
NHC01.P01	Pipe	12.000000 None	NONE
DCB02.P07	Pipe	12.000000 None	NONE
DCB02.P08	Pipe	12.000000 STORMWATER OR ILLICIT	Clear
DCB02.P09	Pipe	4.000000 Roof Drain (dry)	Clear
DCB02.P10	Pipe	4.000000 Roof Drain (dry)	NONE
DCB02.P12	Pipe	4.000000 Roof Drain (dry)	
TCL02.P01	Pipe	4.000000 UNKNOWN	
MBR14.P01	Pipe	4.000000 None	
LWS02.P01	Pipe	2.000000 None	
LWS06.P05	Pipe	10.000000 None	
LWS06.P01	Pipe	4.000000 None	
LWS09.P01	Pipe	4.000000 Roof Drain (dry)	
LWS10.P01	Pipe	4.000000 None	
LWS10.P02	Pipe	6.000000 None	
LWS10.P03	Pipe	10.000000 None	
LWS05.P01	Pipe	8.000000 None	
DCB01.P04	Pipe	12.000000 None	NONE
DGB06.P01	Pipe	12.000000 None	NONE
DGB06.P04	Pipe	12.000000 Industrial	NONE
DGB06.P05	Pipe	4.000000 Roof Drain (dry)	NONE
DGB06.P06	Pipe	4.000000 Roof Drain (dry)	NONE

PHS09.P01	Pipe	12.000000 None	
PHS09.P02	Pipe	12.000000 None	
PHS09.P03	Pipe	12.000000 Stormwater	Clear
DRN05.P01	Pipe	12.000000 None	
DRN28.P02	Pipe	12.000000 None	
DRN29.P09	Pipe	6.000000 None	
DRN29.P04	Pipe	12.000000 None	Clear
DRN30.P02	Pipe	12.000000 None	
DRN11.P10	Pipe	12.000000 Stormwater	Clear
DRN14.P01	Pipe	12.000000 None	None
DRN14.P02	Pipe	12.000000 None	None
DRN21.P02	Pipe	4.000000 NONE, BUT POSSIBLY FORM WASHING MACHINE	
DRN21.P03	Pipe	4.000000 NONE, BUT POSSIBLY FORM WASHING MACHINE	
DRN16.P01	Pipe	4.000000 None	NONE
DRN16.P05	Pipe	12.000000 Stormwater	Clear
TCC02.P06	Pipe	3.000000 None	
TCC03.P01	Pipe	4.000000 Roof Drain (dry)	
TCC04.P01	Pipe	4.000000 None	
TCC05.P01	Pipe	12.000000 None	
TCC05.P02	Pipe	12.000000 None	
TCC03.P02	Pipe	12.000000 None	
TCC03.P03	Pipe	12.000000 None	
TCC03.P04	Pipe	12.000000 None	
TCC03.P05	Pipe	12.000000 None	
TCC07.P02	Pipe	12.000000 Stormwater	Clear
TCC07.P07	Pipe	12.000000 None	
TCC07.P12	Pipe	4.000000 Roof Drain (dry)	
UPB32.P03	Pipe	12.000000 Stormwater	
UPB32.P02	Pipe	3.000000 Stormwater	
UPB32.P01	Pipe	3.000000 Stormwater	
UPB44.P02	Pipe	6.000000 Stormwater	Clear
UHB03.P12	Pipe	12.000000 Stormwater	Clear
UHB03.P13	Pipe	10.000000 Stormwater	
UHB03.P14	Pipe	12.000000 Stormwater	Clear
UHB09.P01	Pipe	12.000000 Stormwater	Clear
UHB09.P02	Pipe	12.000000 Stormwater	
UHB09.P03	Pipe	12.000000 None	

UHB09.P04	Pipe	12.000000 Stormwater	Clear
NHC02.P02	Pipe	12.000000 None	NONE
NOR12.P01	Pipe	2.000000 None	NONE
NOR02.P03	Pipe	4.000000 Industrial	Clear
NOR02.P01	Pipe	6.000000 Industrial	
NOR22.P01	Pipe	12.000000 None	
NHC19.P01	Pipe	12.000000 None	
NHC16.P02	Pipe	12.000000 None	
NHC15.P08	Pipe	12.000000 None	
NHC15.P06	Pipe	12.000000 None	
NOR12.P03	Pipe	6.000000 Industrial	NONE



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

W. Tayloe Murphy, Jr.
Secretary of Natural Resources

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Robert G. Burnley
Director

Gerard Seeley, Jr.
Regional Director

July 7, 2004

Jeff W. Perry
Department of Public Works
P.O. Box 27032
Richmond, VA 23273-7032

Dear Mr. Perry:

Thank you very much for your written comment on the Tuckahoe Creek, White Oak Swamp, and Four Mile Creek TMDLs in Henrico County. Your comment is summarized below and along with our response.

1. County of Henrico Public Works staff located 200 unregulated point sources, or "straight pipes" during a county-wide stream assessment undertaken in 2000. They provided pipe diameter, type and quality of discharge, and latitude / longitude of each unregulated point source pipe. Henrico County staff request that DEQ staff investigate these pipes as part of any implementation plan.

Response: DEQ appreciates that the County of Henrico has provided us with the locations of these pipes. DEQ pollution response staff has begun investigation of these pipes to include sampling and source identification. The complete investigation of these pipes is anticipated to take one year. Those pipes found to be illicit discharges will be further investigated to determine the source and corrective actions will be taken. This investigation will be included in the implementation plan if not complete by the time the plan is written.

Please let me know if you have any questions regarding the information provided. I would be happy to make myself available to further discuss the TMDLs in Henrico County.

Sincerely,

R. Christopher French
TMDL Coordinator
Piedmont Regional Office, DEQ



Capital Region Airport Commission

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Richmond International Airport, VA 23250-2400

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February 26, 2004

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MAR 01 2004

PRO

Mr. Chris French
Virginia Department of Environmental Quality
4949-A Cox Road
Glen Allen, Virginia 23060

Re: White Oak Swamp TMDL Comments

Dear Mr. French:

The Capital Region Airport Commission has reviewed the Bacteria Total Maximum Daily Load (TMDL) and assessment of pH prepared by Virginia Department of Environmental Quality for the White Oak Swamp watershed. The Commission's comments regarding these proposed TMDLs are enclosed. Comments detailed as a result of the Commission's staff review primarily focus on the Capital Region Airport Commission's VPDES permit VA0090301, clarity of the document, or address a few minor errors.

Thank you for the opportunity to review and comment on White Oak Swamp TMDL. Should you have any questions regarding these comments, please call me at 226-3017.

Sincerely,

John B. Rutledge, P.E.
Director, Planning and Engineering

Cc: Jeb. S. Putnam. P.G., MACTEC

Comments on White Oak Swamp Bacteria TMDL Henrico County, Virginia

- 1) Page 1, third paragraph: "The average annual rainfall as recorded at Richmond WSO airport, VA (within 8 miles of the study area) is 43.29 inches." *Comment: The Richmond International Airport is located at the headwaters of White Oak Swamp as described in Section 2.2.1 General Description, and is part of the study area as shown on Figure 1.*
- 2) Page 1, fourth paragraph: "Out of 14 bacteria samples collected during the 1998 assessment period, 3 violated the water quality standard. During the subsequent 2000 assessment period, 8 of 32 samples violated the water quality standard, and during the most recent 2002 assessment period, 12 of 53 samples violated the standard. A total of 86 fecal coliform samples, with 19 water quality standard violations, were taken by DEQ at station 2-WOS002.69 from May 1996 through August 2003. *Comment: A summary table is not provided for the water quality data collected at station WOS002.69. Using the narrative information provided for the 1998, 2000, and 2002 assessment periods, there were 23 violations from 99 samples collected. This differs from the 19 violations for 86 samples from May 1996 through August 2003 as stated.*
- 3) Page 1, seventh paragraph: "The load-duration approach is used to develop the TMDL for the study watershed." *Comment: Selection of the most appropriate analytical tools for fulfillment of the modeling objectives should be based on the technical requirements dictated by the White Oak Swamp watershed, the nature of impairment, and the physical characteristics of the contaminant. The use of a comprehensive, dynamic simulation model is critical for realistic representation of watershed processes in White Oak Swamp. DEQ Guidance Memo No. 03-2012, dated September 3, 2003 states; "HSPEXP is the preferable tool to be used in the hydrologic calibration process, however, other decision support software such as PEST is also acceptable." Why was a load-duration approach utilized and what could be the long-term impact to stakeholders by using this approach rather than a dynamic model as used in other bacteria TMDL studies conducted in Virginia?*
- 4) Page 1, ninth paragraph: "The bacteria loads in the study watershed were calculated for point and non-point sources, because there was one possible future permitted bacterial point source discharge in the watershed, and one Municipal Separate Storm Sewer System." *Comment: The future permitted bacterial point source discharge is identified as the Capital Region Airport Commission in Section 5.2, Page 16. Section 5.2 specifies that the Capital Region Airport Commission is in the application phase requesting a chlorine surrogate limit. The Capital Region Airport Commission is not currently in a permit application phase; VPDES Permit VA0090301 expires on May 12, 2005. The existing permit has no discharge limits for Fecal Coliform or E. Coli. Dr. Oula Shehab, with the Piedmont DEQ office, has indicated there is no plan for adding either parameter (fecal coliform or E. Coli) into future permits. Therefore, no bacteria loads should be calculated for this "future permitted bacterial point source discharge".*
- 5) Page 2, third paragraph: "There were two wasteload allocations for permitted point sources in the White Oak Swamp watershed, Capital Regional Airport Commission VA0090301 at 6.27 x

- 10^9 cfu/yr, multiplied by a factor of 5 to 3.14×10^{10} cfu/yr for future growth, and Henrico County Separate Storm Sewer System VA0088617 at 1.58×10^{12} cfu/yr.” *See Comment No. 4. No wasteload allocation should be allocated for the Capital Region Airport Commission.*
- 6) Page 5, Sections 2.1 and Section 2.1.1: *Comment: Section 2.1 is not listed in the Table of Contents. Section 2.1.1 has the same information as presented in Section 2.1.*
 - 7) Page 6, paragraph 1: “White Oak Swamp, located entirely within Hanover County, is a minor tributary to the Chickahominy River.” *Comment: White Oak Swamp is located in Henrico County.*
 - 8) Page 6, paragraph 1: “It is about 9.5 miles long and flows eastward from its headwaters at Richmond RIC airport to its confluence with the Chickahominy River.” *Comment: The proper name for the airport is the Richmond International Airport.*
 - 9) Page 10, first and second paragraphs: “Out of 14 bacteria samples collected during the 1998 assessment period, 3 violated the water quality standard. During the subsequent 2000 assessment period, 8 of 32 samples violated the water quality standard, and during the most recent 2002 assessment period, 12 of 53 samples violated the standard. A total of 86 fecal coliform samples, with 19 water quality standard violations, have been taken by DEQ at station 2-WOS002.69 (Figure 4) from May 1996 through August 2003 (Table 4).” *Comment: See Comment No. 2.*
 - 10) Page 12, Figure 6: *Comment: The figure’s legend is not completely displayed.*
 - 11) Page 16, fourth paragraph: “The Capital Regional Airport Commission (VA0090301) is in the application phase requesting a chlorine surrogate limit. So Capital Regional Airport Commission VA0090301 will be used to determine a fecal bacteria load allocation for future discharges.” *Comment: See Comment No. 4. The Capital Region Airport Commission has not requested a chlorine surrogate limit.*
 - 12) Page 17, second paragraph: “Percent imperviousness for White Oak Swamp urban land use was determined from Table 5.5, page 37, of the Lynnhaven Bay bacterial TMDL. Low intensity residential land use in the White Oak Swamp watershed was given 20% imperviousness from the Single family / duplex land use for Lynnhaven Bay. The high intensity residential White Oak Swamp land use was given 50% imperviousness from townhouse imperviousness in Lynnhaven, and high intensity commercial White Oak Swamp land use was given 70% imperviousness from commercial land use in Lynnhaven.” *Comment: This paragraph is very confusing and relies heavily on data from another TMDL study which is not included to assess the appropriateness of the land uses. A more detailed explanation should be included justifying use of the percent impervious land use areas assigned to the White Oak Swamp watershed.*
 - 13) Page 18, Table 7: *Comment: The Capital Region Airport Commission currently has no E. Coli limit and according to the DEQ Piedmont office will not receive a E. Coli limit when VPDES Permit VA0090301 is renewed in 2005. Therefore, no wasteload allocation should be calculated for permit VA0090301 as shown on Table 7.*

- 14) Page 19 first paragraph: "Because Capital Regional Airport Commission VA0090301 is in the application phase requesting a chlorine surrogate limit, it was used to determine a fecal bacteria load allocation for future discharges of 6.27×10^9 cfu/yr. *Comment: See Comments No. 4, 11 and 13. The Capital Region Airport Commission has not requested a chlorine surrogate limit.*
- 15) Page 24, third paragraph: "Piscataway Creek was used as the reference stream because it was also the reference stream for the adjacent watershed White Oak Swamp load-duration TMDL report, with a much better R factor than Totopotomoy Creek for that correlation." *Comment: Fourmile Creek is the adjacent watershed with a load-duration TMDL.*
- 16) Page 26, third paragraph: "In order to plot existing fecal coliform (FC) data against the E. coli (EC) standard/TMDL line, it was necessary to translate the FC data to EC data. Translation of FC data to EC data was achieved by using a translator equation developed from a regression analysis of 493 paired FC/EC data sets from the DEQ's statewide monitoring network." *Comment: Was a statistical evaluation performed on the existing E. Coli and fecal coliform data (sampling events listed in Table 6) to determine whether the translator equation developed from other data is appropriate for White Oak Swamp? Could the existing data be used for a set of regressions (translator equations) developed for wet and dry weather conditions? Because the major sources of fecal coliform bacteria in White Oak Swamp are non-point and storm-related sources, a wet weather regression could be used to translate fecal coliform observations to E. Coli counts.*
- 17) Page 26, fourth paragraph: "For 2002 and 2003 where possible actual E. coli sample results were used to calculate observed data E. coli loads." *Comment: We are not clear to the meaning of this sentence, can you clarify or re-word?*
- 18) Page 28, Figure 8: "The highest exceedance of the water quality standard occurred at low flows (86% flow interval at 3.29 cfs). This represents the flow condition under which the largest bacteria reduction is required in order to meet water quality standards." *Comment: Is it appropriate to calculate the percent reductions based solely on one sample, which appears to be an outlier, rather than a method which considers all flow condition?*
- 19) Page 30, first paragraph: "There were two wasteload allocations for permitted point sources in the White Oak Swamp watershed, Capital Regional Airport Commission VA0090301 at 6.27×10^9 cfu/yr, multiplied by a factor of 5 to 3.14×10^{10} cfu/yr for future growth, and Henrico County Separate Storm Sewer System VA0088617 at 1.58×10^{12} cfu/yr. These two WLAs were totaled for the total point source wasteload allocation of 1.61×10^{12} cfu/yr." *Comment: Removing the Capital Region Airport Commission as a point source (See Comments No. 4, 11, and 13 will increase the Henrico County load allocation slightly.*
- 20) Page 31, first paragraph: "The load allocation for any future Capital Regional Airport Commission discharge proved to have an insignificant reduction of the TMDL allowable load, so that the load allocation for non-point sources virtually equaled the annual average TMDL load." *Comment: See Comments No. 4, 11, 13 and 19.*

- 21) Page 31, third paragraph: "The load duration method of TMDL development has been evaluated against TMDLs that were developed using computer modeling. The results showed the load duration method to be slightly more conservative. Additionally, the load-duration method uses the single-most extreme water quality violation event and applies it to all conditions." *Comment: If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. Additional information on the load-duration approach for White Oak Swamp is needed. Is it appropriate to utilize the single-most extreme violation and apply it to all flow conditions?*
- 22) Page 35, third paragraph: "Results suggest that as many as 32 of the 35 violations (91%) could be related to runoff events." *Comment: According to information provided, there are 19 or 23 violations of water quality standards (see Pages 1 and 10 and Comment Nos. 2 and 9). Was a larger data set used to evaluate this analysis?*
- 23) Page 35, third paragraph: "Nine six occur in low flows, including the maximum violation resulting in the 97% E. coli load reduction." *Comment: According to the information in Appendix E, nine occur in low flows.*
- 24) Page 36, first paragraph: "VADEQ will continue monitoring 2-WOS002.69 in accordance with its ambient watershed monitoring program to evaluate reductions in fecal bacteria counts and the effectiveness of TMDL implementation in attainment of water quality standards." *Comment: Why will fecal coliform reductions be evaluated since this TMDL is being developed to meet water quality standards applicable to E. Coli.? Flow monitoring of White Oak Swamp should be implemented to further assess the flow duration curve developed for the watershed.*
- 25) Page 37, eighth paragraph: "In order for the new criteria to apply to a specific stream segment, the primary contact recreational use must be removed." *Comment: Based on the information developed to date for this TMDL, it appears that White Oak Swamp will not attain water quality standards even with the proposed 99 percent reduction in anthropogenic sources due to the natural background conditions (i.e., the significant wildlife contribution). We disagree with the suggestion that TMDLs should be done where natural conditions preclude the attainment of water quality standards. The designated uses for White Oak Swamp do not appear to be appropriately set. This is consistent with EPA's Advanced Notice of Proposed Rulemaking on the federal water-quality standards regulation, which cautioned that designated uses were set incorrectly by many states. Virginia's listing methodologies should require that designated uses and associated water-quality criteria be reevaluated before including water bodies on 303(d) lists. If uses are not properly set, then conclusions regarding impairment relative to water-quality standards applicable to protecting those uses will be erroneous.*

Comments on White Oak Swamp pH TMDL or Natural Conditions Henrico County, Virginia

1) *Comment : Based on the information provided during the Technical Advisory Committee – Stakeholder Meeting on January 13, 2004 and the Public Meeting on January 29, 2004, a change in the pH standard due to natural conditions, rather than a TMDL seems appropriate for White Oak Swamp and it's tributaries.*



COMMONWEALTH of VIRGINIA

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July 7, 2004

John B. Rutledge, P.E.
Director, Planning and Engineering
Capitol Region Airport Commission
1 Richard Byrd Terminal Drive
Richmond International Airport, VA 23250-2400

Dear Mr. Rutledge:

Thank you very much for your written comments on the White Oak Swamp TMDL in Henrico County, submitted to us on February 26, 2004. Your comments have been summarized below along with our responses (in italics).

1. The location of the Richmond International Airport was incorrect in Page 1, par. 3.

Response: This has been corrected.

2. A summary table is not provided for water quality data... In Page 1, par. 4, the numbers of violations and samples per assessment period do not add up to the total number of violations and samples from May 1996 to August 2003.

Response: We will add a data summary table in an appendix. The numbers of violations and samples in the 1998, 2000, and 2002 assessments do not add up to the total violations and samples for the period of record because each assessment is taken from a preceding 5 year assessment window. Thus three years of violations and samples are double-counted in each subsequent two year assessment. This is a standard EPA water quality assessment report requirement.

3. In Page 1, par. 7, A load-duration approach is used to develop the TMDL for this watershed. Why was a load-duration approach utilized and what could be the longterm impact to stakeholders by using this approach rather than a dynamic model as used in other bacteria TMDL studies conducted in Virginia?

Response: DEQ uses a combination of EPA-approved load-duration and contractor-modeled TMDL procedures to complete the large (and growing) number of bacterial caused TMDLs. Dynamic models performed by outside contractors are expensive. DEQ does not have staff resources to perform a large

number of dynamic model bacterial TMDLs. DEQ cannot complete the number of bacterial TMDLs scheduled in the 1998 Consent decree with available funding unless a significant portion of the bacterial TMDLs are done in-house by the EPA approved load-duration method. There is no long-term impact to stakeholders anticipated from use of the load-duration method.

4. Page 1, par. 9, ...Capital Regional Airport Commission is in the application phase requesting a chlorine surrogate limit. There are no plans for a chlorine or bacterial limit request, nor is the airport commission permit in the application phase.

Response: DEQ Piedmont Regional Office permit writer staff confirmed that the Capital Region Airport Commission does not have a reissuance application for the RIC airport requesting to add chlorine surrogate limits as stated in the draft TMDL report. The permit is an individual stormwater permit and does not address fecal coliform bacteria or disinfection of the stormwater runoff. This has been corrected in the draft report.

5. Page 2, par. 3, Please see February 4, 2004 comment above.

Response: This has been corrected in the report.

6. Section 2.1 is not listed in the Table of Contents. Section 2.1.1. has the same information as presented in Section 2.1.

Response: This has been corrected in the report.

7. Page 6, par. 1, White Oak Swamp is described as located in Hanover County, rather than Henrico County.

Response: This has been corrected in the report.

8. Page 6, par. 1, The proper name for the airport is Richmond International Airport.

Response: This has been corrected in the report.

9. See comment and response #2.

10. Page 12, Figure 6, The figure's legend is not completely displayed.

Response: This has been corrected in the report.

11. Please see comment and response #4 above. This has been corrected in the report.

12. Page 17, par. 2 is very confusing and relies heavily on data from another TMDL, which is not included to assess the appropriateness of the land uses. A more detailed explanation should be included justifying use of the impervious land use areas assigned to the White Oak Swamp watershed.

Response: A more detailed explanation of the method and a percent impervious table adapted from the Lynnhaven TMDL have been added to this section.

13. Please see comment and response #4 above. This has been corrected in the report.

14. Please see comment and response #4 above. This has been corrected in the report.

15. Page 24, par. 3, Fourmile Creek is the adjacent watershed with a load-duration TMDL.

Response: This has been corrected in the report.

16. Page 26, par. 3, Was a statistical evaluation performed on the existing E. coli and fecal coliform data (sampled events listed in Table 6)...? Could the existing data be used for a set of regressions (translator equations) developed for wet and dry weather conditions? Because the major sources of fecal coliform bacteria in White Oak Swamp are NPS and storm-related, a wet weather regression could be used to translate fecal coliform observations to E. coli counts.

Response: Only ten data pairs were available in Table 6 for a specific White Oak Swamp translator regression. This was felt to be insufficient. The correlation of the 493 data pairs was judged the best estimator of E. coli concentration from fecal coliform. The major use for the translator regressions is in translating all (both dry and wet weather) historical fecal coliform data into E. coli estimates for use in E. coli loadings in all DEQ load-duration studies state-wide. Individual station correlations of insufficient numbers of data pairs were deemed less accurate. Separate dry and wet weather translators used to translate all historical fecal data would require determining dry and wet weather sample dates for all historical fecal data in each impaired segment, which was deemed too time-consuming.

17. Page 26, par. 4, The sentence “For 2002 and 2003 where possible actual E. coli sample results were used to calculate observed E. coli loads.” is unclear. Please clarify.

Response: From 9/23/2002 to 8/5/2003 DEQ sampled E. coli concurrently with fecal coliforms. For this period DEQ used the actual E. coli results to derive the E. coli loads, rather than translated E. coli estimates from fecal coliforms. A statement to this effect has been added.

18. Page 28, figure 8, Is it appropriate to calculate the percent reductions based solely on one sample, which appears to be an outlier, rather than a method which considers all flow conditions?

Response: EPA requires that states determine the worst case exceedance of the E. coli standard and base the TMDL reduction on that. This provides part of the implicit margin of safety required for the TMDL by increasing the likelihood that the TMDL reduction will protect human health by lowering bacterial levels below the water quality standard under all flow conditions.

19. Page 30, par. 1, Please see comment and response #4 above. This has been corrected in the report.

20. Page 31, par. 1, Please see comment and response #4 above. This has been corrected in the report.

21. Page 31, par. 3, If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. Additional information on the load-duration approach for White Oak Swamp is needed. Is it appropriate to utilize the single-most extreme violation and apply it to all flow conditions?

Response: The load-duration method for White Oak Swamp, and for all watersheds where this method is used, provides several different types of implicit MOS. For instance, the TMDL is written for the new and more stringent E. coli water quality standard, rather than for the older less stringent fecal coliform water quality standard under which the original violations occurred. The load-duration method requires a wasteload allocation for MS4 permits, which double-counts the NPS bacterial loading from urban landuse runoff by attributing load to both point source stormwater outfalls and the NPS sheet flow entering the MS4 outfalls. The load-duration method requires a multiplier of 5 for point source wasteload allocations to account for future growth. This margin of safety factor for future development reduces the available load allocations for NPS runoff, reducing the allowable TMDL load. The TMDL reduction is calculated from the highest percent violation sample load above the allowable E. coli load to increase the likelihood that the TMDL reduction will protect human health by lowering bacterial levels below the water quality standard under all flow conditions. A statement describing these methods for an implicit margin of safety was added to the report.

22. Page 35, par. 3, According to information provided, there are 19 or 23 violations of water quality standards. Was a larger data set used to evaluate this analysis?

Response: There were 19 fecal coliform sample violations during the White Oak Swamp station period of record, as shown in Appendix F. The 35 E. coli water quality standard violations compared to rainfall and runoff data were translated E. coli values and direct E. coli sample results in late 2002 and 2003, as shown in Appendix E.

23. Page 35, par. 3, According to the information in Appendix E, nine occur in low flows.

Response: This has been corrected in the report.

24. Page 36, par. 1, Why will fecal coliform reductions be evaluated since this TMDL is being developed to meet water quality standards applicable to E. coli? Flow monitoring of White Oak Swamp should be implemented to further assess the flow duration curve developed for the watershed.

Response: The statement has been corrected to E. coli in the report. Flow monitoring at load-duration TMDL stations is too expensive to continue. Flow gage installation by the USGS costs \$12,000 to \$15,000 up-front, with annual monitoring costs of \$10,000 after installation. The large number of bacterial TMDL stations prohibits this expense.

25. Page 37, par. 8, ...Virginia's listing methodologies should require that designated uses and associated water quality criteria be re-evaluated before including water bodies on 303(d) lists. If uses are not properly set, then conclusions regarding impairment relative to water quality standards applicable to protecting those uses will be erroneous.

Response: EPA requires the methods and designated uses set forth in Virginia's 303(d) listing methodologies. These are specified in EPA guidance documents. EPA has just agreed to the new category "secondary contact recreational use" in the past year, which would allow substantially higher bacterial criteria. However EPA requires that secondary contact recreational use cannot be initiated unless TMDL implementation and post-monitoring data show that primary contact recreational use bacterial criteria cannot be met.

Please let me know if you have any questions regarding the information provided. I would be happy to make myself available to further discuss the White Oak Swamp TMDL in Henrico County.

Sincerely,

R. Christopher French
TMDL Coordinator
Piedmont Regional Office, DEQ